IN THE UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

IN RE: EPHEDRA PRODUCTS LIABILITY LITIGATION

PERTAINS TO:

HARBIR SINGH, et al. v. Herbalife International Communications, Inc., et al.

DEPOSITION OF BRUCE CHARLES ZABLOW
New York, New York
Wednesday, January 10, 2007

Reported by:
PENNY SHERMAN
JOB NO. 9935

January 10, 2007
2:00 p.m.

Deposition of BRUCE CHARLES ZABLOW, held at the offices of Heidel, Pittoni, Murphy & Bach, 99 Park Avenue, New York, New York, pursuant to Subpoena, before Penny Sherman, a Notary Public of the State of New York.

APPEARANCES:

RHEINGOLD, VALET, RHEINGOLD, SHKOLNIK & McCARTNEY
Attorneys for Plaintiff
113 East 37th Street
New York, New York 10016
BY: DAVID B. RHEINGOLD, ESQ.

HEIDEL, PITTONI, MURPHY & BACH, LLP
Attorneys for Defendant
99 Park Avenue
New York, New York 10016
BY: CHARLES L. BACH, ESQ.

GOODWIN PROCTER, LLP
Attorneys for Defendants
599 LEXINGTON AVENUE
New York, New York 10022
BY: FREDERICK R. McGOWEN, ESQ.

IT IS HEREBY STIPULATED AND AGREED, by and between the attorneys for the respective parties herein, that filing and sealing be and the same are hereby waived.

IT IS FURTHER STIPULATED AND AGREED that all objections, except as to the form of the question, shall be reserved to the time of the trial.

IT IS FURTHER STIPULATED AND AGREED that the within deposition may be sworn to and signed before any officer authorized to administer an oath, with the same force and effect as if signed and sworn to before the Court.

Zablow

BRUCE CHARLES ZABLOW, called as a witness, having been duly sworn by a Notary Public, was examined and testified as follows:

EXAMINATION BY
MR. McGOWEN:

Q. Good afternoon, doctor. May I ask you to state your full name for the record.

A. Bruce Charles Zablow.

Q. My name is Fred McGowen. I am with the law firm of Goodwin Procter. Goodwin Procter represents the defendants in this case: Two Herbalife entities and a gentleman named Steve Peterson.

I will be asking you a number of questions today. If I ask you a question and you don't hear me well or the question doesn't make sense to you, please just let me know and I will rephrase it or repeat it for you. And it's important that your answers be verbal so our reporter can record what you're saying. And it's also important that we not talk at the same time and that helps the reporter keep a clear record.

If you want to take a break at any time,

Zablow

please just say so.

Do you have a CV with you today?

A. Yes, I do.

Q. May I just take a look at that?

Is your CV current?

A. I believe it is.

Q. Are you presently studying for any additional degree or certificate or license?

A. No.

Q. Doctor, do you practice medicine?

A. Yes, I do.

Q. What is your specialty or specialties?

A. I am a neuroradiologist and my subspecialty is interventional neuroradiology and endovascular neurosurgery.

Q. Doctor, have you ever been an employee or a consultant for any designer, manufacturer or distributor of pharmaceutical products?

A. No.

Q. Have you ever been an employee or consultant for any designer or manufacturer or distributor of nutritional supplements?

A. No.

Q. Have you ever authored or conducted or

Zablow

participated in any research with respect to pharmaceutical products or nutritional supplements?

A. No.

Q. Doctor, your CV includes a list of presentations, and in addition to that, have you authored any publications?

A. Yes, I have.

Q. Do you have a list of the publications that you've authored?

A. Not with me.

Q. Have any of the publications that you have authored concerned Ephedra or sympathometic preparations, S-Y-M-P-A-T-H-O-M-E-T-I-C?

A. No.

Q. Doctor, in the past, have you ever been a party or witness in a lawsuit that concerned Ephedra or sympathometic preparations?

A. No.

Q. In the future, have you agreed to be a witness in the future in any lawsuit where a party alleges injury as a result of ingesting a nutritional supplement or a sympathometic type of product?

A. No.

Zablow

Q. Doctor, have you ever worked as an expert witness before?

A. Yes.

Q. How many times?

MR. BACH: What do you mean by that? How many times has he been retained or testified?

Q. How many times have you been retained?

A. In what capacity?

Q. As an expert witness, either to consult with a party or to provide a report or provide testimony in court or a deposition.

A. The answer is, yes, I have, and the answer is, multiple times.

Q. Have any of those cases involved patients who had strokes of any type?

A. Yes. I've been an expert witness in cases that involve patients with strokes.

Q. In those cases involving patients who had had strokes, did any of those cases concern whether that stroke resulted from the ingestion of any particular product?

A. No.

Q. Have you ever heard or read --

Zablow

A. No, I think that's not correct.

Q. Okay.

A. I think there -- I redact that. There was one case that I think I was involved as an expert in a case where there was a history of cocaine or methamphetamine, one of those two. I forget.

Q. Do you remember what year you provided expert services in that case?

A. Probably in the last five years.

Q. Were you an expert for the plaintiff or the defendant in that case?

A. I believe I was an expert for the defense since I was a -- in part, a treating physician.

Q. So this was someone --

A. I was a treating physician.

Q. This was someone who had been your patient who was the plaintiff?

A. It was somebody that I had done a diagnostic examination of, who was a patient at the hospital, but I was not a party to the lawsuit.

Q. When you say a patient at the hospital, what hospital --

A. St. Vincent's Hospital.
Q. Do you remember that patient's name?
A. No, I don't.
Q. Were you first contacted by an attorney with respect to working as an expert in that case?
A. Was I -- I'm sorry, was I first contacted by --
Q. By an attorney.
A. I believe I was contacted by the defense firm for the defendant --
Q. Okay.
A. -- who was an attending physician at the same hospital that I was, where the patient was treated.
Q. Do you remember the name of the firm that represented that?
A. Yes, I do.
Q. What was the name?
A. Heidel, Pittoni.
Q. Do you know what court that case had been filed in?
A. Yes.
Q. What court was that?
A. I believe it was in New York County, New

York Supreme.
Q. Do you know how that case was resolved, whether it settled or went to a trial and had a verdict?
A. Went to trial.
Q. And a verdict was issued?
A. I don't remember the verdict.
Q. What was the substance of your opinion in that case?
A. That the patient had a cerebral aneurysm, and that the patient had a subarachnoid hemorrhage from the aneurysm, and that there were vascular changes on the angiogram that indicated that the patient had a vasculitis in addition to the aneurysm, and that the likely cause of the subarachnoid hemorrhage and complications from the subarachnoid hemorrhage were related to the ingestion of, in part, due to the ingestion of these substances.
Q. The ingestion of the cocaine or the methamphetamine, was that related to the --
A. Subarachnoid hemorrhage.
Q. Vascular changes.
A. Related to the subarachnoid hemorrhage

not related to the formation of the aneurysm.
Q. Was there a particular mechanism by which or through which the cocaine and/or methamphetamine contributed to vascular changes?
A. Yes.
Q. What was that?
A. The patient had a vasculitis, inflammatory vasculitis, and the likely cause of the ruptured aneurysm was the fact that there was a vasculitis, but also an exacerbation of blood pressure --
Q. Okay.
A. -- commonly associated with the use of those drugs.
Q. Doctor, have you ever heard or read the name, Herbalife?
A. No.
Q. Never communicated with anyone who you believe to be associated with Herbalife?
A. No.
Q. Have you ever communicated orally or in writing with any governmental agency with respect to Ephedra?
A. No.

Q. Have you ever done any research or given any presentations that concerned Ephedra?
A. No.
Q. Doctor, this is a copy of a subpoena and I'm just going to ask you if that is a copy of the subpoena that you received.
A. It looks like it could be.
MR. McGOWEN: All right. So I'm just going to ask the reporter to mark this for us and we'll continue, and also we will get the CV marked.
(Zablow Exhibit 1, Copy of Subpoena, marked for identification, as of this date.)
(Zablow Exhibit 2, CD of Dr. Bruce Charles Zablow, marked for identification, as of this date.)
MR. McGOWEN: Can we take a short, five-minute break? He's going to set up a computer for me.
Actually, if we can just stay on the record.
Q. Doctor, did you bring anything with you today, any documents or things relating to Mr. Singh or in response to the subpoena?

Zablow

A. Only copies of his angiograms, selected films of his angiograms, films that were involved in the treatment of his aneurysm.

Q. I have brought along with me a copy of the entire chart that I received from St. Vincent's Hospital. I'm going to mark it. You may or may not want to refer to it. It's just here if you need it.

MR. McGOWEN: So this is going to be Exhibit 3A and 3B.

(Zablow Exhibit 3A, Copy of Harbir Singh's chart from St. Vincent's Hospital, marked for identification, as of this date.)

(Zablow Exhibit 3B, Copy of Harbir Singh's chart from St. Vincent's Hospital, marked for identification, as of this date.)

Q. So, Doctor, in the event you want to locate something in either of those two binders, I have with me a rough index of what's in these two binders, so I can probably assist you in finding any document you're looking for.

I also have separate copies of pages from the record that we will use and we'll just mark those separately.

Zablow

MR. McGOWEN: We might as well take a short break while we finish up here.

(Discussion off the record.)

Q. Doctor, did you review anything to prepare for the deposition today?

A. No.

Q. Other than your counsel, was there anyone who you discussed this case or this deposition with?

A. No.

Q. Have you had any communication with the plaintiff in this lawsuit, Harbir Singh, or the co-plaintiff --

A. No.

Q. -- Ms. Caragata, since the time that you provided treatment to Mr. Singh?

A. No.

Q. Do you have a recollection, independent of any hospital record or anything, of who Mr. Singh is?

A. Just a vague recollection. I remember what bed he was in.

Q. You remember what bed he was in?

A. In the intensive care unit.

Zablow

Q. Do you have any recollection of Mr. Singh's wife, Ms. Caragata, Doina Caragata, D-O-I-N-A, C-A-R-A-G-A-T-A?

A. No.

Q. Do you recall any friend or family members who might have visited Mr. Singh?

A. No.

Q. Did you make any records regarding your treatment of Mr. Singh, other than what might appear in the St. Vincent's chart or radiological scans?

A. No.

Q. Do you know on what date you first had any contact with Mr. Singh?

A. Independently, no.

Q. Why don't we try to just establish the period of time that you provided any treatment to Mr. Singh.

I believe from my review of the record that Mr. Singh's hospitalization at St. Vincent's began on May 10th of 2003. And let me just show you two pages from the hospital chart from the progress note section dated May 10th. And can you tell me, are those your notes?

Zablow

A. Yes, they are.

Q. Do those notes refresh your recollection at all -- I'll let you read and then I'll ask you a question.

A. These would be my treatment records from the day that I treated Mr. Singh.

Q. Okay.

A. Which would probably be shortly after him coming to the hospital.

Q. Okay. So, does it appear that your treatment of Mr. Singh began on the first day of his hospitalization at St. Vincent's on May 10, 2003?

A. Yes.

Q. Can we establish the last date that you provided any treatment to Mr. Singh?

Why don't I ask that this way: Did you perform any procedures on Mr. Singh at St. Vincent's?

A. Yes.

Q. I will show you records dated May 12th of 2003.

MR. McGOWEN: Why don't we go ahead and mark this as -- mark the May 10th notes as

Zablow

Exhibit 4.

(Zablow Exhibit 4, Progress notes dated May 10, 2004, marked for identification, as of this date.)

MR. McGOWEN: And then let's mark 5 and 6.

(Zablow Exhibit 5, Record of a cerebral angiogram performed on Harbir Singh, marked for identification, as of this date.)

(Zablow Exhibit 6, Record of endovascular treatment of cerebral aneurysm performed on Harbir Singh, marked for identification, as of this date.)

Q. So, if we could look at what we've marked as Exhibits 5 and 6. Do those records -- are those records of the procedure that you performed on Mr. Singh?

A. Yes, two procedures.

Q. What procedures did you perform?

A. The first procedure was a cerebral angiogram. And second procedure was endovascular treatment of the cerebral aneurysm.

Q. These procedures were performed on May 12th of 2003; is that correct?

Zablow

A. No. They were performed on the 10th.

Q. On the 10th. Okay.

A. Yeah. I think the computer here probably made a typographical error, because my -- the hospital record indicates he was admitted on the 10th, and my operative notes that I handwrote on the 10th are on the 10th.

MR. BACH: Dr. Zablow is referring to Plaintiffs' Exhibit 4, his handwritten notes.

Q. Doctor, after performing these procedures, did you have any further contact with Mr. Singh?

A. I would have seen him periodically when he was in the intensive care unit.

Q. How did you, if you recall, how did you become involved in Mr. Singh's care?

A. I became involved because he was admitted to the hospital, and sometime, probably midday on the 10th, and he was -- had a CAT scan done in the hospital that indicated that there was a subarachnoid hemorrhage. And I was -- I would have been contacted by a neurosurgical resident from our service who would have contacted me regarding what the findings were.

Zablow

And at that point, they would have initiated a request for me to do a cerebral angiogram. And if the anatomy of the aneurysm was such that he was amenable to it, that I would treat the aneurysm after having completed the diagnostic portion of the test.

Q. When you wrote your first note, would that have been the time when you first had contact with Mr. Singh?

A. That would have been shortly after I had contact with him.

Q. Okay.

A. Probably just prior to instituting the -- getting started to do the procedure.

Q. Had he already had that first CT scan at the time that you first saw him?

A. He would have had it done at that point.

Q. When you first had contact with Mr. Singh, did you perform a physical examination?

A. I would have performed a cursory neurological examination.

Q. Did you order any additional tests at the time that you first saw Mr. Singh?

A. He would have had all of the testing

Zablow

that would have been required for the purposes of surgery done in the emergency room. That would have all have been done before he got to me.

Q. Would that have been, in terms of radiology, what, in addition to the CT scan that he initially had, would he have had or did he have?

A. Without reviewing the medical record, I would know. The only thing that I could imagine that he could have possibly had would have been a chest x-ray, if he had that done.

Q. In terms of medical history, what information was available to you about Mr. Singh on May 10, 2003?

A. Very, very limited. My note indicates that because of his neurological dysfunction at the time that he was admitted to the hospital, that he wasn't comatose, but he was severely drowsy and not really very capable of being able to provide much in the way of information.

And it indicates that because of the level of consciousness that the consent for performing these procedures had to be done by the cooperation of two treating physicians to make that decision since he wasn't sufficiently able to give

Zablow

any informed -- to have an informed consent discussion with him.

Q. Which two treating physicians were involved in making that decision?

A. It would have been myself and it would have been one of the other physicians. I can't tell you who that would have been.

Q. Okay.

A. It might be on the surgical consent form. It's possible.

Q. Did you have any information on May 10th of 2003 with respect to medications or nutritional supplements that Mr. Singh may have been taking?

A. No.

Q. At any time during your treatment of Mr. Singh, did you ever have any information concerning whether he had ever ingested an Ephedra-containing product?

A. Not to my knowledge.

Q. So, doctor, in determining -- you've already indicated that you did perform a procedure on Mr. Singh. So in determining whether to perform that procedure, what information did you consider?

A. Well, first consideration would be what

Zablow

the nature of the disease was, which was a subarachnoid hemorrhage. The second consideration was his level for clinical grade; in other words, what's called a Hunt and Hess scale, H-U-N-T, H-E-S-S, which is basically a grading scale for patients who have subarachnoid hemorrhage as to their level of consciousness and if they have a degree of neurological dysfunction.

And the other factor that goes into this is the -- would be the appearance of the blood on the CT scan as to the -- there's a grading scale for the CT scan as to the severity of the bleed. And that would be the -- that would really be the basic information.

And the other information that we would look at would be whether or not there are any contraindications to proceeding. With surgery, that would largely be anesthetic complications that would contraindicate whether or not he was a candidate for general anesthesia.

Q. So, did you look at this information and come to the conclusion that surgery should be performed?

A. Yes.

Zablow

Q. And you mentioned the nature of the disease being subarachnoid hemorrhage. You mentioned the Hunt and Hess scale. What was Mr. Singh's -- where did he fall on that scale?

A. Well, the scale is basically grades zero through five. Zero is, you don't have a bleed. Grade five is that you're in a coma.

So Mr. Hess was a -- Mr. Singh was grade three, which meant he was sleepy but arousable. So he was not at the point where he was in a coma, but he was neurologically impaired, and he didn't have a fixed neurological deficit at that point, meaning a cranial nerve dysfunction or a hemiopalgia or something of that sort.

Q. You also mentioned that you considered the appearance of the blood on the scan as to the severity of the bleed. What were your findings in that regard?

A. Well, there's a scale for grading a subarachnoid hemorrhage, which is basically one through four, one being minimal blood, grade four is a significant amount of blood. And he was a grade four, which meant he had a very significant amount of blood in the brain, in the subarachnoid

Zablow

space, also in the ventricles.

He also did not show improvement in his neurological state, because the ventriculostomy had already been placed in him by one of my nurses or colleagues, which is a drainage catheter to drain the blood from the brain, drain the spinal fluid from the brain to the outside environment to relieve the intracranial pressure. That didn't change his neurological status.

Q. Prior to actually performing any procedure on May 10th of 2003, did you consider any potential etiologies for Mr. Singh's subarachnoid hemorrhage?

A. Well, about 90 percent of subarachnoid hemorrhage is caused by an aneurysm. So if you hear hoof beats, like with horses, so...

Q. So you have a strong suspicion at that point that it was --

A. It was an aneurysm. Ruptured cerebral hemorrhage.

Q. And was there any other potential etiology that you were considering at that time?

A. Well, the other causes for subarachnoid hemorrhage are generally intravenous malformations

of the brain. And the pattern of the blood on the CT scan and the severity of the blood on the CT scan pretty much go against that.

Q. So you were -- it seems like you were fairly sure that this was an aneurysm situation before you actually did the procedure?

A. Yes. I was very sure that that's what we would find.

Q. If we could look at Exhibits 5 and 6, I believe are your procedure reports.

Actually, doctor, before we look at that, can we look back at Exhibit 4 and may I just ask you to read your 4:00 p.m. preop note.

A. Preop note: 41-year-old male with subarachnoid hemorrhage. Hunt and Hess grade three. Fisher grade four with diffuse blood on CT scan. Status post ventriculostomy on the right for hydrocephalous. Currently intubated on diprivan drip for sedation. Emergency angiography requested to evaluate subarachnoid hemorrhage for probable aneurysm. Plaintiff's wife left hospital. Angio and endovascular surgery if needed to be performed to treat aneurysm to be done under 2MDPC. Case discussed with Dr. Hirschfeld. CT scan reviewed.

Q. And we already talked about what your observations were with respect to the CT scan?

A. Yes.

Q. Doctor, let me go ahead and ask you to read the 8:20 p.m. operative note.

A. Operative note. Procedures: Four vessels cerebral angiography, GDC coiling of left intracranial, left internal carotid intracranial bifurcation aneurysm. Postoperative left internal carotid cerebral angiogram. Surgeon: Zablow. Anesthesiologist: Levin, general anesthesia.

Findings: 7.1 by 4.7 millimeter bilobed, left internal carotid artery bifurcation aneurysm, injecting superiorly, posteriorly with fundal teat, T-E-A-T, present on dome. No vasospasm at present. No other aneurysm seen. Discussed with Alan Hirschfeld regarding findings and treatment.

Treatment: Aneurysm densely coiled with 4GDC10 coils. Excellent packing. No prolapse into ICA bifurcation. No distal emboli seen. No vital sign changes throughout the procedure. Patient to have CT scan postoperative tonight.

Q. So, doctor, you described performing a

coiling procedure. What was your objective in performing that procedure?

A. To try to exclude the aneurysm from the cerebral circulation.

Q. Is that another way of saying that you were trying to stop the flow of blood from the aneurysm?

A. Correct.

Q. Were you successful in doing that?

A. Yes, I was.

Q. Now, if we could look at Exhibit, I believe it's 6. Let's look at Exhibit 6 on page 2.

MR. RHEINGOLD: Can we identify what that is?

MR. McGOWEN: I'm just about to ask him to do that.

Q. Doctor, can you tell me what is that that you're looking at in Exhibit 6?

A. It's the last paragraph of the description of the operative procedure and the paragraphs that deal with the findings and the impression.

Q. In the paragraph where you describe your findings, you write, There is a peculiar appearance

of the cervical left internal carotid artery, which has the appearance of dysplasia and most likely fibromuscular dysplasia, although it does not have the class classic string-of-pearl appearance commonly seen with FMD.

Doctor, when you wrote this in your findings, what was the importance of this information?

A. Only that on the angiography, the appearance of that artery in the left side of the neck, which supplies the left side of the brain, had an unusual appearance, which usually is an indication that there's some sort of an arterial wall problem with the wall of the artery.

Q. Did you believe that this peculiarity of the cervical left internal carotid artery was related to Mr. Singh's having this aneurysm?

A. There's an association between people who have dysplastic arteries and intracranial aneurysms. It's not a one-to-one relationship, but it's probably not unrelated. Cerebral aneurysms are congenital. There was nothing atypical about the appearance of his aneurysm or the location of the aneurysm. That was atypical for a berry

aneurysm.

So other than the fact that they're associated with what can be seen in three to five percent of the general population, there was nothing particularly abnormal about the aneurysm itself that suggested that, in and of itself, it wasn't just a congenital berry aneurysm. But there is an association between dysplastic arteries and aneurysms.

Q. In your next sentence you write -- well, two sentences later, At the current time, no evidence of vasospasm is noted.

Why did you make that notation?

A. Well, vasospasm is an event that's precipitated by blood in the subarachnoid space and can also be precipitated by exogenous things that can be ingested like drugs, cocaine, amphetamines, where the arteries in the brain can have an abnormal or spastic looking appearance. And he didn't have it.

The other implication of this is that sometimes when people have ruptured aneurysms and they present to the hospital, the actual event that brings them to the hospital may have been proceeded

by a bleed that may have occurred several days before and may not have really been noticed by the plaintiff. They might have had a headache, but it might not have been a catastrophic headache.

If vasospasm is present at the time of the angiogram, the overwhelming likelihood is that it didn't get there in a couple of hours. It usually takes a few days for it to develop. So the mere fact that it wasn't present is an indication, in conjunction with the patient's indication, that his symptoms started at 11 o'clock in the morning on the same day that he presented to the hospital, that he had not had a previous hemorrhage, or at least not one that produced vasospasm, and that the event that resulted in coming to the hospital was probably the event that he described at 11 o'clock in the morning.

Q. At the -- on the same page, the very last -- the second to the very last sentence, it seems to indicate evidence of vasospasm bleed?

A. That's typographical.

Q. So that should be no evidence?

A. Right. It's typographical.

Q. So, doctor, you mentioned that the

appearance of the cerebral left internal carotid artery -- were you saying that that appearance was an indication of an arterial wall problem?

A. Yes.

Q. Did the appearance of the artery tell you or suggest to you for what period of time that wall problem had been in existence?

A. No. The one thing it -- that is evident from the angiogram is that the problem is not a hemodynamic flow-related problem involving the brain in the sense that if the cerebral circulation is put together in a way that one of the carotid arteries is the dominant of the two carotid arteries and is supplying a disproportionate amount of vascular territory in the brain, then there may be hemodynamic consequence with regards to the arteries that are in the neck that come off the aorta that will supply the brain.

In this particular circumstance, the dominant carotid artery circulation is actually contralateral right side. So that would indicate that the changes in the carotid artery on the left side were not the result of hemodynamic stress on the carotid artery, but rather that there's some

sort of a collagen vascular problem or wall problem with the wall of the artery.

MR. BACH: Would you just read back the last sentence?

(The last sentence of answer was read.)

Q. So, doctor, when you say that it did not appear that a hemodynamic problem was present, are you saying that there did not appear to be issues with too little or too much blood flow?

A. No. What I'm saying is that if there's an artery that's subject to hemodynamic stress because it's carrying more blood than it needs to carry because of the way that the cerebral circulation is supplied, that you may see some changes in the caliber or tortuosity of the arteries or other findings in the arteries that would be abnormal, but could be based on the fact that there's more stress on the wall of the artery because of the hemodynamics of how the brain is being supplied.

In this situation, the contralateral or right carotid system is the dominant system. The reason we know that, as I indicated in my report, that both of the anterior cerebral arteries were

Zablow

filling from the right side, which means that a portion of the left side of the brain, as well as the whole right side of the brain, was being supplied by the right carotid system.

So the right carotid system was the one carrying more flow than it would normally carry. Again, this is developmental, but that the left side basically not being the dominant system was not subjected to any kind of unusual hemodynamic stress.

Q. Doctor, am I correct in that you stated that the bleed did not appear to be the result of any exogenous substance having been ingested?

A. No. What I said was that there wasn't anything evident angiographically that would indicate that this was anything other than a routine rupture of a berry aneurysm.

Q. Something that Mr. Singh had had from the time of his birth?

A. It's thought that cerebral aneurysms are congenital, and why they rupture or how they rupture or when they rupture is not precisely known, but that they are -- that the weakness in the artery is there from birth and the aneurysm may

Zablow

be there. It may at some point rupture, so...

Q. Was there -- did you make any determination during your treatment of Mr. Singh as to any particular reason why his aneurysm ruptured when it did?

A. Yes. The reason it ruptured is that the aneurysm had developed to teats on the dome of the aneurysm which are areas where the wall of the aneurysm are focally weaker than other portions. And in an aneurysm that he had, those -- it's a bifurcation aneurysm arising at the, what we call the termination of a major artery into two other arteries.

Aneurysms that arise in that kind of configuration are susceptible to a lot of stress on the dome of the aneurysm because of the way the blood flows from one artery into the aneurysm before the aneurysm bifurcates into two other vessels. It's like a T.

So bifurcation aneurysms of this type are generally very dangerous aneurysms because of the fact that they're subject to a lot of stress, which is why they form in the first place. And then they are subject to rupturing because of the

Zablow

fact that the dome of the aneurysm is subjected even to more stress than say an aneurysm that arises on the side wall of an aneurysm. This is what we call a bifurcation aneurysm or a T aneurysm.

And that type of an aneurysm is particularly dangerous. When they develop these teats on the aneurysm, that's generally where the aneurysm ruptures from. So over time, they form the aneurysm. Then the aneurysm enlarges. In time, the teats form, and then at some point, one of the teats ruptures, and that's how it all occurs.

Q. So if we -- can we actually think, if we have the letter T image in our heads, where on that letter T would those two teats or were these two teats?

A. The aneurysm is at the -- the aneurysm is at the end of the internal carotid artery before it divides into the anterior cerebral and middle cerebral artery. The teats are on the top of the dome of the aneurysm, which in Mr. Singh, was slightly towards the anterior cerebral side. Excuse me, I correct that. It was slightly towards

Zablow

the middle cerebral side.

Q. And did you -- did you make any determination during your treatment of Mr. Singh -- strike that.

So, are you saying that over time, the stress on this aneurysm, particularly due to its location, inevitably led to this bleed?

MR. McGOWEN: Objection to form.

Q. He's just stating his objection.

MR. BACH: You can answer.

A. Can you repeat what you said?

Q. Sure. Sure.

Are you saying that the stress on this aneurysm, particularly due to where it was located, inevitably led to the bleed?

A. Yes.

MR. RHEINGOLD: Objection to form.

Q. Did you make any or did you find during the course of your treatment of Mr. Singh, that there was anything that contributed; other than the passage of time and the stress on the aneurysm, is there anything that contributed to the bleed?

MR. RHEINGOLD: Objection to form.

MR. BACH: You can answer.

A. The only other finding that I found on the angiogram was the presence of the abnormality in the cervical carotid artery on the left side, which could indicate that there's -- that there may be a contributing wall factor problem with the cerebral artery.

Q. Okay. Now, is this what we were talking about before?

A. Yes.

Q. You mentioned a collagen vascular issue that relates to this wall problem. Did you make any determination during your treatment of Mr. Singh of what -- of why he had this wall problem?

MR. RHEINGOLD: Objection to form.

A. The presence of a dysplastic artery on an angiogram is very nonspecific. It doesn't tell you what the microscopic pathology is. It has a certain appearance that lends itself to a spectrum of diseases that can be associated with this. The most common of the diseases that are associated with it is fibromuscular. Overwhelmingly, that's the most likely possibility.

The other abnormalities that can be

associated with arterial dysplasias are very, very uncommon and they have other manifestations in other organ systems.

So, in and of itself, the over -- given the fact that it did not look like that the dysplasia was related to atherosclerosis, and given the fact that it was unilateral and did not involve other of the cerebral arteries or the precerebral arteries, the likelihood is based on my experience, with almost 30 years of doing this, that that's what probably this was, some sort of a dysplasia, which FMD is overwhelmingly the most likely possibility.

Anything that might be due to other factors oftentimes would involve more of the precerebral arteries or other precerebral arteries. If it was atherosclerosis, it would have a different appearance. If it was hemodynamic, there would have to be an explanation for it in terms of, you know, how things work together. So, in the absence of that, this is the most likely possibility.

Q. Doctor, I think you testified on this before. Just to clarify, is there -- did you make

a determination during your treatment of Mr. Singh as to the etiology of the dysplasia?

A. No.

Q. Is that a condition that is congenital?

A. It probably is congenital. It's most commonly asymptomatic in and of itself. So, therefore, most of the time it's not identified even if you have it, unless there's something else that might warrant you to look at the arteries.

The other reason that it's an important finding is that in doing endovascular procedures, when you have dysplastic arteries, one has to be extremely careful in doing these procedures because these arteries in the neck are extremely fragile, and they're easily torn and you can wind up with a dissection, which is a tear in the wall of the artery from the catheters and wires. That's the real reason that it's important to know it from a standpoint of treatment.

Q. So, the fragile nature of the arteries arises out of the dysplasia?

A. Yes.

Q. And did you determine that the fragile nature of Mr. Singh's arteries contributed to his

bleed?

A. Well, ultimately the artery bled, so the part of the artery that bled, I guess, was fragile. Again, I would not -- I would caution to draw a direct correlation between the changes in the cervical carotid and intracranial carotid because these are two distinct diseases, even though there may be an association between the two in that people who have dysplastic arteries someplace may be more prone to having cerebral aneurysms, but that doesn't mean that the dysplasia is responsible for the cerebral aneurysm.

Cerebral aneurysms in and of themselves are, from a population basis, extremely common. That being so, and the fact that the aneurysm, there was nothing particularly atypical about the aneurysm. There's nothing to say that this is anything other than a congenital berry aneurysm.

Q. Doctor, you brought films with you and I brought films with me. I believe you said earlier that the films you brought are only from May 10th; is that correct?

A. Yes.

Q. Do we have --

Zablow

MR. BACH: We have a view box.

Q. Doctor, would you be able to locate a film from May 10th that would show us the location of the aneurysm and would also show us what you described as what appear to be dysplasia?

A. This is a frontal projection of a left internal carotid cerebral angiogram.

Q. So, when you saw a frontal projection, are you saying --

A. Anterior posterior.

Q. Straight on.

A. Which demonstrates the presence of an abnormal collection of contrast material contained in an aneurysm arising at the top of the internal carotid artery where the internal carotid artery divides into the anterior cerebral and middle cerebral arteries.

Q. So --

A. I think I misspoke before. This aneurysm is slightly more to the anterior cerebral side than to the middle cerebral side. But it's basically internal carotid --

Q. So you mentioned contrast material, and that's some sort of material that was injected so

Zablow

that you could visualize --

A. It's an iodinated material. It's a salt that's a liquid contrast that's injected into an artery that shows up on x-rays.

Q. So, it looks like the aneurysm is sort of at the top of this T or this bifurcation?

A. Yes, that's correct.

Q. So the flow of blood is up towards the top of the T?

A. Yes.

Q. So, when you mentioned the stress on the aneurysm, are you referring to the blood rising to the top of the T and having to change directions right at the point where that aneurysm is?

A. That is correct.

Q. How can we -- is there a distinct identifier on these particular angiograms?

A. As to?

Q. As to how can we identify this for the record, this particular --

A. This is the time, 7:21 59 seconds. In other words, 7:21, or 7:22, 5:10.

Q. P.m.?

A. P.m.

Zablow

MR. McGOWEN: Off the record for a second.

(Discussion off the record.)

MR. McGOWEN: We are -- this will be Exhibit 7.

(Zablow Exhibit 7, Image 8 of 14, dated May 10, 2003, marked for identification, as of this date.)

MR. McGOWEN: Let's mark my copy -- can you make me one more tab, Exhibit 8?

(Zablow Exhibit 8, unidentified exhibit, marked for identification, as of this date.)

Q. Doctor, we've marked as Exhibit 7 the same image that you were discussing earlier, frame 8 of 14, May 10, 2003, the time 1821:59. That was the anterior posterior ones that you were describing.

Just below the T, just below where the aneurysm is, it seems to be another, something that's being highlighted by the contrast material. Do you know what that is?

A. What that is is, that's the carotid site. That's where the artery bends. That area is this area (indicating).

Zablow

Q. Oh, it would be --

A. If you look at this straight on, this looks like this in that projection (indicating).

Q. Let's put number 7 back up for a second. Now, do we have an image that will show us the -- what appeared to be dysplasia?

A. Yes.

Q. Is that the same image? Is that --

A. It's on the same image. This portion of the artery -- this is in the high part of the neck below the skull base. This frame and also this frame shows a very peculiar focal widening and narrowing.

Q. This is in a different portion of the artery from where the aneurysm is?

A. This is extracranial. This is like at the C2 level, C2, C3 level; in other words, the second vertebrae.

Q. Correct me if I'm wrong, but were you saying earlier that this condition in this -- I'll call it the lower part of the T --

A. No, this isn't in the T. This is in the --

Q. Not in the T? Is it even below that?

A. This is -- this is -- the T is in the head.

Q. Okay.

A. This is in the neck. It's the same artery, but it's in the neck. It's the cervical carotid as opposed to the intracranial carotid.

Q. So this is considerably farther down --

A. A couple of inches.

Q. This artery --

A. Yeah. Several inches.

Q. From the aneurysm?

A. Yeah. Several inches.

Q. The condition of the artery in the area where the appearance of dysplasia is, it seems like you were telling me that that is a separate finding or it doesn't particularly relate to the aneurysm?

A. It's a separate finding. It may be an indication that the patient -- it's most likely an indication that the patient has dysplastic arteries, but these are angiograms, not biopsies. So the artery looks -- when the wall of the artery has this unusual appearance, since we can't give a precise histologic diagnosis, it's certainly regarded as being dysplastic.

Arteries are generally smooth and they're -- they taper from large to small. They don't usually have multiple areas of out-pouching or caliber changes along the course. It's unusual. Usually when it's seen, it's usually an indication of a dysplastic problem with the artery.

Q. So the dysplasia down at the cervical level is an indication that there could be an issue with the wall of the artery up in the area of where the --

A. As well as other places.

MR. RHEINGOLD: Objection.

Q. In Mr. Singh's case, I believe you were saying that you can't say specifically what the etiology of that dysplasia is; is that correct?

A. What I said is that there are a limited number of conditions that cause dysplastic arteries. Most of the time it's problem is what's called a collagen vascular problem, which is because the wall is partly composed of collagen. Of the collagen vascular problems or dysplasias, far and away fibromuscular is the most common problem.

Other causes are unusual and they are

associated commonly with other systemic diseases, like neurofibromatosis, like sickle-cell anemia. So, he doesn't have those diseases.

Q. In Mr. Singh's case, was there any indication as to the origin of this collagen vascular --

A. Well, again, you can't -- yeah, the answer is no. All you can say is it's an observation. And it's a radiologic finding that has a pathological corollary. The appearance is unusual and, therefore, it falls into the term of dysplasia.

I don't want to use the word it's definitely fibromuscular, because I don't know that, but it's an unusual finding. And the appearance of this artery was very, very dissimilar to all of the other arteries in the rest of his neck up to his brain. It had a more unusual appearance.

Q. When you were performing this procedure, did you -- you mentioned earlier that the -- you have to be careful because the artery can be weak or --

A. Fragile was the word I used.

Q. When you were actually performing the procedure on Mr. Singh, did you -- was there anything about performing that that indicated to you whether this was a particularly fragile area that you were working on?

A. No. The answer is that certainly questions were taken to try to minimize the potential traumas of the wall of the artery so as not to get into a situation where there was a tear or a dissection of the artery.

Q. We can sit back down.

Can you show us where the teats are?

A. One is here (indicating). The other is here on this projection. And one here (indicating). If you look at it in the lateral projection, the aneurysm is here and one of the teats is here. You see they are two lobes?

Q. So, where was the opening that you were referring to?

A. It would have been -- right now, the opening is sealed. You're not seeing actual extrapolation or contrast, but where these aneurysms rupture would be someplace in this dome, in this teat.

Zablow

Q. Okay. Do we have a film that shows the flow of blood from the teat before you performed the procedure?

A. No. The aneurysm -- when an aneurysm ruptures, the body has a mechanism to stop bleeding. So the bleeding had occurred several hours before this was performed. If the bleeding was occurring during this, we would have a dead or near-dead patient.

Q. Before you actually perform the procedure, the body's mechanisms had --

A. It forms a blood clot.

Q. Okay.

A. And it stops the bleeding and seals the perforation. It's sort of like a balloon that has a hole in it or a tire that has a hole in it, and the body does something to try to form a small clot right on the perforation to stop the bleeding.

Q. That clot probably would not have -- that was not a permanent solution, right? You still --

A. No. No. The risk of it rebleeding in the first day after this occurs is around seven percent. The chance that it would occur in the

Zablow

first two weeks is around 30 percent. So that's the reason for the urgency in trying to treat it as soon as you can, because of the fact that the highest incidence of rebleeding is in the first several hours after it ruptures.

MR. McGOWEN: All right. Let's sit back down.

Q. So, doctor, Mr. Singh had another series of scans done after the procedure that you performed?

A. Yes, he did.

Q. Did you review that next series of scans?

A. Yes, I did.

Q. Was that on May 13th when those were done?

A. No. The same day.

Q. Same day?

A. Yes, same day.

Q. What were your -- what observations or findings did you make based on the next or the second series of scans on May 10th?

A. That he had a -- findings -- I'm reading from my handwritten notes. Findings: He had a

Zablow

ventriculostomy catheter on the right side; that the ventricles were decompressed well; that the subarachnoid hemorrhage was unchanged compared with earlier scan; that there was no acute bleeding secondary to the procedure coiling, and there were no acute ischemic changes of the brain.

Q. So you were just reading from your note that is -- it looks like 8:50 is the time?

A. No. Yeah, 8:50, 5/10/03, 8:50 p.m.

Q. Is that another note following that that you wrote?

A. No, it's -- oh, yeah, just that I wrote a note. It says, Discussed results of surgery with Alan Hirschfeld after CT.

Q. Now, was there a subsequent series of scans that you reviewed?

A. There may be, but I don't have independent recollection of that.

Q. Doctor, let me show you a report that -- I'll let you tell me what it's dated, because I'm not sure.

A. The 13th.

Q. Okay. Let me also show you all of those.

Zablow

A. This one is a duplicate of this. It's just the way they xeroxed it.

Q. Okay. So, the one that is dated -- the report that's dated May 13th, when you reviewed this film, what were your observations or findings?

A. That there was a resolving subarachnoid hemorrhage. That there was a small amount of intracranial blood along the course of where the ventriculostomy catheter was, and there was some edema or increase in water content surrounding the area of hemorrhage in the anterior aspect of the right basal ganglia and the anterior lateral aspect of the right thalamus.

Q. And doctor, do you know who Dr. Khorsandi, K-H-O-R-S-A-N-D-I, is?

A. Yes, I do.

Q. Who was that?

A. She was a radiologist that was employed by the hospital at this time.

Q. Was she working with you on --

A. No, she didn't work with me.

Q. I see that the -- we'll mark these reports in a second, but I see that the one that is dated May 24th has Dr. Khorsandi's name on it.

Zablow

Would that be an indication that by that point -- or were you still involved in Mr. Singh's care at that point?

A. I would have been. It's just that the way -- the scan was probably not marked for my attention. It was probably marked and it just came through in a stack of other scans and was read by somebody else.

Q. So you were continuing to review his scans?

A. Yeah. Yes, I would.

Q. Based on -- what were the findings for the May 24th scan?

A. My copy is sort of cut off on the right side of the...

Q. Unfortunately, that's the way --

A. Well, I think I can sort of make this out.

Q. Okay.

A. The main finding on the scan that she's described are that there are luscencies (phonetic) in the lentiform nucleus on the right side, which is likely ischemic. In other words, it's likely a result of a vasospasm resulting from the

Zablow

subarachnoid hemorrhage.

Q. So, the vasospasm that's being -- that you're referring to now is something that occurred after Mr. Singh's bleed occurred?

A. Yes. It's a response of the cerebral arteries to the fact that the blood that's normally in the arteries is outside the arteries, so it becomes on irritant to the wall of the arteries.

Usually, at some point after three or four days, up to about two, two and a half weeks, there's a propensity for the arteries to go into spasm as a result of the irritation from the subarachnoid hemorrhage. There's a direct correlation with the likelihood that one is going to develop vasospasm related to the amount of blood that's present on the first CT scan.

So the higher the score is for the subarachnoid hemorrhage on the initial CT scan, which is called the Fisher scale, the more likelihood is that you'll get a vasospasm. There's a pretty good correlation between the two.

So if you're a grade four, the chance that you're going to get a vasospasm is very likely. If you have a grade one bleed, the

Zablow

likelihood is much lower. He was a grade four.

Q. Doctor, from the time of the procedure that you performed on through the end of the time that you provided treatment to Mr. Singh, were there any findings that changed any of the impressions that you had made up through the time of the procedure?

A. I'm not sure I can answer that. It's a very broad question.

Q. It's kind of general.

A. It's a very broad question.

Q. What was your final diagnosis for Mr. Singh?

A. Subarachnoid hemorrhage, secondary to a ruptured intracranial aneurysm. Secondary complication would be cerebral vasospasm, secondary to subarachnoid hemorrhage.

Q. That is essentially what you suspected before you performed the procedure, correct?

A. Yeah. Well, I didn't suspect that he had vasospasm, but the vasospasm is an expected complication of the subarachnoid hemorrhage given the amount of blood that he had on the scan.

MR. RHEINGOLD: Just to be clear for the

Zablow

record, you're talking about vasospasms?

THE WITNESS: Related to subarachnoid hemorrhage.

MR. RHEINGOLD: How many days after the original bleed? We're not talking acutely with the bleed.

THE WITNESS: No, no.

MR. RHEINGOLD: Right.

THE WITNESS: It's subacute.

MR. BACH: That's for the May 24th --

THE WITNESS: 23rd.

MR. BACH: 23rd CT.

THE WITNESS: Right. Just so that we're clear, the CT scans don't show you vasospasm; they show you the effects of vasospasm. And by the time you see it on the scan, where the findings are more obvious, the vasospasm has been there for a while, because what you're looking at is structural damage to the tissue.

I think there was an indication -- I'm sure there was, because I read it. Yeah. On the scan that I dictated on the 17th, I guess I dictated it -- well, I don't know who dictated it. I can't really tell, but on the

Zablow

scan on the 17th, there are already changes in that part of the brain.

In the second paragraph of that report, it starts to describe changes in the density of the right peduncle posterior limb of the internal capsule. That's all due to vasospasm.

Q. Again, we're talking about postbleed vasospasm --

A. Right. It's exactly -- the timing is exactly what you would expect for somebody to get into this kind of a situation.

Q. Doctor, do you have any recollection of Mr. Singh's, or do you have any knowledge of his condition upon his discharge from the hospital?

A. At the time he was discharged, he was disabled. As to what his final disposition is, I wouldn't know without reviewing his record.

Q. Doctor, was there any finding that you made that indicated to you that Mr. Singh's bleed was a result of anything that he ingested?

A. To my knowledge, no. I have no knowledge of that.

MR. McGOWEN: Thanks, doctor.

Zablow

Mr. Rheingold may have some questions for you and then I may have one or two follow-ups after that.

EXAMINATION BY
MR. RHEINGOLD:

Q. We discussed dysplasia. Is that a finding that you can determine through neuroradiology?

A. Yes.

Q. You, in fact, in this case, diagnosed dysplasia?

A. It's a descriptive term; it's not a pathological term.

Q. It described what we saw on the film as a vessel that tapered abnormally?

MR. McGOWEN: Objection to form.

A. It's more than a tapering. It's a vessel that has multiple areas of contour irregularity. The full answer is, where it's unrelated to anything that was done to the artery mechanically or as a result of trauma or something that's iatrogenic.

Q. How many inches did you say that was from the aneurysm?

Zablow

A. Probably three inches.

Q. Did you see any evidence of dysplasia between the aneurysm and the area you noted on the film, which was three inches away?

A. Yes. The artery doesn't have a total normal contour in terms of the way it tapers. There's something peculiar about the way the -- about the contour of this artery.

Q. When we were looking at the film before, you seemed to just isolate one section that was two or three inches away --

A. That was the more obvious area. The area of abnormality actually extends more distal than that, but it's less obvious.

Q. Does it extend all the way to the T?

A. No, it doesn't.

Q. About how far from the T does it stop?

A. It doesn't go intracranially. It stops below -- it stops at about the level of the skull base below the -- right at the level of the skull base.

Q. And the vessel wall is made up of certain layers?

A. Yes.

Zablow

Q. With regard to the dysplasia, can you explain the effect on any or all of the layers?

A. Usually the -- usually the intima is -- the endothelial lining is usually normal. It's usually the muscular layer of the wall of the artery that's abnormal. And then the outer most aspect of the wall is usually normal. So most of the time, if there is a problem, it's usually in the muscular portion of the second layer. It's in the media, not the tissue or the intima.

Q. With neuroradiology and the angiograms we looked at, is it possible for you personally to discern where the intima, media and outer layers are?

A. No. What you're looking at on the angiogram is the intima. You're looking at the lumina. You're not looking at -- the wall is not visible.

Q. In order to make a conclusive diagnosis that dysplasia does, in fact, exist, would pathology have to be done?

A. Pathology would be useful for characterization of the specific type of dysplasia. The angiographic findings are fairly obvious and,

Zablow

therefore, in terms of characterization of a dysplasia, I think you could safely characterize the artery as being dysplastic, as a descriptive term. But if you want to know the precise pathology of the wall of the artery, you'd have to biopsy and remove a segment of the artery, which would be ridiculous.

Q. And with regard to the -- in your report, you mentioned fibromuscular dysplasia.

A. Right.

Q. Is that a definitive diagnosis you made?

A. No, I suggested. I said it doesn't have the classic appearance, but it's certainly within the spectrum of that. And lacking any of the other diseases that would be commonly associated with dysplasia, that overwhelmingly is the most likely possibility.

And he's not African-American, so you know he's not going to be a sickle-cell problem. He doesn't have neurofibromatosis as far as we knew. He doesn't have a lot of the other types of diseases, at least that were ever disclosed. So I think it's just a, you know, just an observation. It's a descriptive -- description of what's the

Zablow

matter with the artery.

Q. Does the vessel become weakened with dysplasia?

A. Generally, when you have dysplasia in the carotid artery in the neck, it generally does not cause a problem. The reason being is that it's not a disease that causes a -- your carotid artery in your neck is not going to rupture. It's a much heavier artery, much bigger artery, much sturdier artery than the intracranial vessel is. So generally, it doesn't cause problems in that regard.

There may be problems that are stroke-related problems that can deal with stenosis or things like that, which are not present. And it's not uncommon in people who have it in one spot that sometimes their renal arteries are involved and they may have problems with hypertension.

So it's not a problem that's generally in one area. There may be other areas with a problem. The most common areas would be the carotid arteries, the renal arteries.

Q. Now, turning to the aneurysm you've described, this is a berry aneurysm?

Zablow

A. Right.

Q. And either specifically talking about Mr. Singh's aneurysm or aneurysms in general, whichever you prefer, do they have various layers to the vessel wall?

A. Well, they don't have a vessel wall. What they have is the intima. The reason it forms is that the media and the adventitia are deficient and the intima herniates through the wall of the vessel. So all they have is an intima lining and a few fibers of the muscular wall that they kind of drag with them on the base of the aneurysm. So they are what they are.

Q. And you described a finding that he had two, I call it teats, you call them tits?

A. Domes, yes. Teats or domes.

Q. Teats or domes.

Are they also just intimal lining?

A. They're intimal lining that's already become thinner. So they're extremely thin.

Q. Do you know for 100 percent surety that the aneurysm broke at the domes?

A. Based on the appearance of this blood on the first CAT scan, this aneurysm, the aneurysm

Zablow

that ruptured, from that CAT scan would be a midline aneurysm, and it would be an aneurysm that ruptured superiorly.

So, the domes or the teats on the aneurysms are on the exact spot where you would expect this to have ruptured to create the pattern of the blood that would be on that CT scan. It fits perfectly. The correlation is perfect with the scan.

Q. Would the dome area be even weaker than the other areas of the aneurysm?

A. Yes.

Q. There was a word you used before that began with bi. It was the area where this was, bifurcation.

A. Bifurcation.

Q. Bifurcation. For bifurcation aneurysms in this area, is there any normal size?

A. No. They can be small. They can be large. They can be giant.

Q. How large was this one?

A. Seven millimeters.

Q. How large can they get?

A. They don't usually get large, because

usually when they get to the point where they're more than four or five millimeters, they usually rupture.

Q. Do people have these aneurysms and they never rupture during their lifetime?

A. Yes. There are people that have them that don't rupture.

Q. Have there been any studies that you're aware of with regard to percentages?

A. Well, if you do autopsies on population, three to five percent of the population at autopsy will have aneurysms in some location. In the United States, per year, there are around 60,000 subarachnoid hemorrhages, which about 50,000 are probably due to ruptured aneurysms.

So if you take, at a minimum, three percent of 300 million people, that would probably give you the lower incidence of how common aneurysms are. If you look at the number of people who rupture, it's whatever the 50,000 is out of the three percent, if you take the lower figure of five percent or if you take the higher figure.

What's the predictor of whether this aneurysm would rupture is the fact that there was

domes on that aneurysm. Once an aneurysm has that morphology, those aneurysms are not going to be around for a long time.

Q. Why is that?

A. Because it's a focal area of the lumine of the aneurysm that's -- of the wall of the aneurysm that's already starting out very, very thin, and it's almost at the point where it's translucent. If you look at it under a microscope, you can actually see the blood, you know, inside the arteries, swirling around inside the artery. It's paper thin, paper thin.

Q. To the best of your knowledge, with Mr. Singh, no one's ever grossly visualized this aneurysm; is that correct?

A. No. His treatment was all endovascular. It didn't require craniotomy.

Q. And you treated this with coils?

A. Platinum coils.

Q. To this day, they have been a great result.

A. Yes, to my knowledge.

Q. Well, I'm telling you.

Were there any other treatment regimens

available to you that you considered at that time, other than platinum coiling?

A. The other treatment alternative would have been a craniotomy and clipping the aneurysm. That was discussed with Dr. Hirschfeld and the clinical grade of the patient at the time that he presented.

The morphology of the aneurysm on the angiogram, the location of the aneurysm, the location of the perforator arteries, which are these tiny little arteries which supply very critical areas of the brain, being right next to the aneurysm, all mitigated against doing a craniotomy to essentially achieve a similar result or maybe not as good a result.

MR. RHEINGOLD: That's all I have.

MR. McGOWEN: I don't have anything more.

Let's mark these last CTs.

(Zablow Exhibit 9, CT scan, marked for identification, as of this date.)

(Zablow Exhibit 10, CT scan, marked for identification, as of this date.)

(Zablow Exhibit 11, CT scan, marked for

identification, as of this date.)

(Time noted: 4:20 p.m.)

_____

BRUCE CHARLES ZABLOW

Subscribed and sworn to before me this ____ day of _____, 2007.

_____

Zablow

C E R T I F I C A T E

STATE OF NEW YORK)
: ss.
COUNTY OF KINGS)

I, PENNY SHERMAN, a Shorthand Reporter and Notary Public within and for the State of New York, do hereby certify:

That BRUCE CHARLES ZABLOW, the witness whose deposition is hereinbefore set forth, was duly sworn by me and that such deposition is a true record of the testimony given by the witness.

I further certify that I am not related to any of the parties to this action by blood or marriage, and that I am in no way interested in the outcome of this matter.

IN WITNESS WHEREOF, I have hereunto set my hand this 17th day of January, 2007.

_____
PENNY SHERMAN

INDEX

*****

*** ERRATA SHEET ***

NAME OF CASE: IN RE: EPHEDRA PRODUCTS LIABILITY LITIGATION

DATE OF DEPOSITION: JANUARY 10, 2007

WITNESS: BRUCE CHARLES ZABLOW

PAGE	LINE	FROM	TO

_____
BRUCE CHARLES ZABLOW

Subscribed and sworn to before me

this ____ day of _____, 2007.

_____ _____

(Notary Public) My Commission Expires: